

U.S. Application No.: 09/909,038

AMENDMENT D AND REQUEST FOR A TELEPHONE INTERVIEW

Attorney Docket: 3975.003

REMARKS

Review and reconsideration of the Office Action dated May 12, 2005, is respectfully requested in view of the above amendments and the following remarks.

Claim 10 has been amended to clarify the invention. The scope of the claim has not been changed.

No new matter has been added to the claims.

The present set of claims contains only one independent claim, namely--Claim 10.

The following remarks are addressed to the sole rejected independent claim, Claim 10, because if Claim 10 is not obvious, it follows that none of the other rejected dependent claims are obvious.

Applicants reviewed the '341 reference and note that compared with Claim 10, the reference fails to teach the steps of:

(1) **selecting** from said first and second mixed catalysts a first **component that is present in only one** of said first and second mixed catalysts using a numerical random generator having a uniform distribution; (step iv)

(2) **crossing said first and second catalyst by removing** said first component from said first or second catalyst having said first component, and adding said first component to said first or second catalyst lacking said first component; (step v)

(3) the mutation process comprises the steps of mutating said third mixed catalyst by adding said component if said third mixed catalyst lacks said component, or removing said component if said third mixed catalyst has said first component. (Step viii).

These steps are important in order to avoid the loss of some of the components, which might be quite beneficial in other combinations. According to this invention, the range of available catalyst components in evolutionary selection, where choices are narrowed down, is kept broader so that in progressing from the first "randomized" step to the following generations created on the basis of an evolutionary selection strategy, some of the original components are not lost after one or a few successive generations.

This method, thus, leads to a greater targeting accuracy in the selection process. This requires a stronger representation of mixed materials having a good catalytic efficiency in the following generations, but, at the same time, retaining at first the mixed materials that are not excellent but whose individual components might be quite beneficial in other combinations, in order to thereby review their possibly positive effect in the following generations. Only when it is found in the evolutionary optimization process that these individual components do not contribute to an improvement in the catalytic materials are they ruled out during the further evolutionary process.

Furthermore, the Examiner is respectfully requested to contact the undersigned at the indicated telephone number to arrange a telephone interview.

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**Office Action**

Turning to the Office Action, the paragraphing of the Examiner is adopted.

**Obviousness**

The Examiner rejects claims 10-17 under 35 U.S.C. 103(a), as being obvious over Wolf, et al. (WO 00/15341).

The position of the Examiner can be found on pages 2-5 of the Office Action.

Applicants respectfully traverse for the following reasons.

The present set of claims contains only one independent claim, namely--Claim 10.

The following remarks are addressed to the sole rejected independent claim, Claim 10, because if Claim 10 is not obvious, it follows that none of the other rejected dependent claims are obvious.

Applicants reviewed the '341 reference and note that compare with Claim 10, the reference fails to teach the steps of:

(1) **selecting** from said first and second mixed catalysts a first **component that is present in only one** of said first and second mixed catalysts using a numerical random generator having a uniform distribution; (step iv)

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component, and adding said first component to said first or second catalyst lacking said first component; (step v)

(3) the mutation process comprises the steps of mutating said **third mixed catalyst by adding said component if said third mixed catalyst lacks said component**, or removing said component if said third mixed catalyst has said first component. (Step viii).

These steps are important in order to avoid the loss of some of the components, which might be quite beneficial in other combinations. According to this invention, the range of available catalyst components in evolutionary selection, where choices are narrowed down, is kept broader so that in progressing from the first "randomized" step to the following generations created on the basis of an evolutionary selection strategy, some of the original components are not lost after one or a few successive generations.

This method, thus, leads to a greater targeting accuracy in the selection process. This requires a stronger representation of mixed materials having a good catalytic efficiency in the following generations, but, at the same time retaining at first the mixed materials that are not excellent, but whose individual components might be quite beneficial in other combinations, in order to thereby review their possibly positive effect in the following generations. Only when it is found in the evolutionary optimization process that these individual components do not contribute to an improvement in the catalytic materials are they ruled out during the further evolutionary process.

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Steps (iv) and (v) are not described in Wolf, et al., because Wolf, et al. teaches that after the experimental check for activity and selectivity in any case 1 - 50 % of the catalysts with the highest amounts of activity and/or selectivity will enter into the next step. There is also no suggestion in the reference to go that different way claim in the invention.

Wolf et al. describes a method of producing active and or selective catalysts from inorganic and organometallic solids or mixtures thereof, whereby potentially catalytic active individual components are first identified in the evolutionary search and optimization method, and by their randomized qualitative and quantitative combination with numerous materials, a first generation of mixed materials is produced and then subjected to catalytic testing. To produce a new generation according to the principles of mutations and crossing, the best materials of the first generation are selected. This procedure has then been used further for all subsequent generations. This method leads to catalysts containing catalytically active components, original components are already removed from the remaining selection process in the first or subsequent generations despite the fact that they could be necessary for an optimum catalyst.

Claim 10 requires:

(1) selection of a first and second mixed catalyst (randomly);

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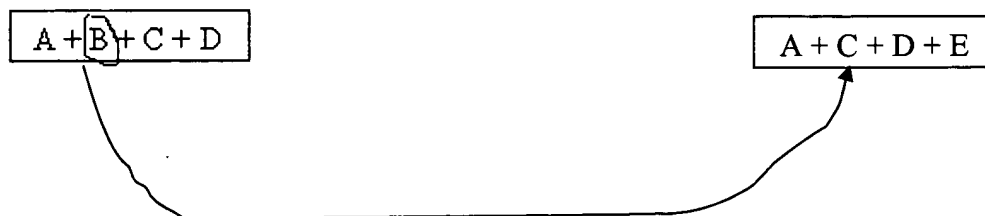
(2) selection of a first component from the first catalyst also randomly and inserting that first component into the second mixed catalyst which did not contain that first component before.

**Illustration**

**A) Present invention**

First mixed catalyst

Second mixed catalyst



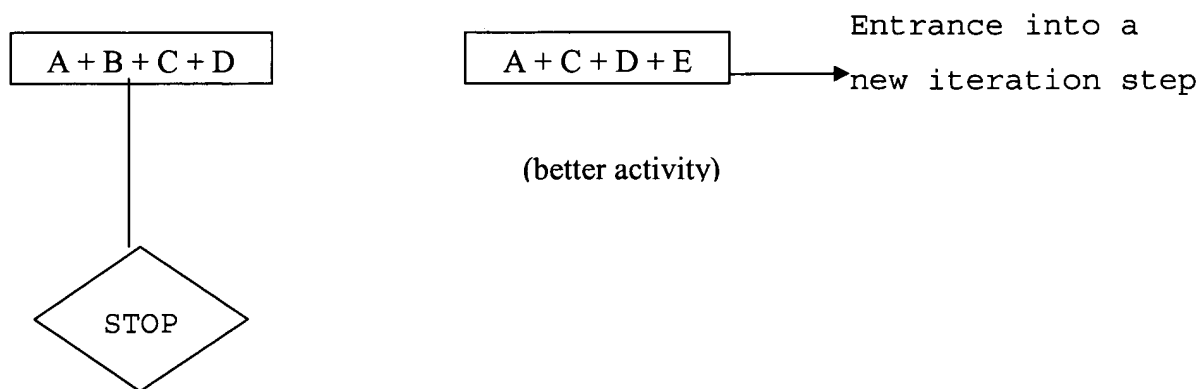
New mixed catalyst

A+C+D

A+B+C+D+E

are obtained in which component B is not lost but contained in a new mixed catalyst.

B) Wolf, et al. (WO 00/15341)



Component B would be lost for the further iteration.

The most important difference between the invention and the '341 reference is the removal of an individual component from 1<sup>st</sup> and 2<sup>nd</sup> mixed catalyst, which component is present in either one of the two only, and add that individual component to the catalyst, which is lacking that individual component. (Steps iv and v).

During the iteration according to Wolf, et al. (WO 00/15341) a catalyst component will be lost if it is not contained within the best 1-50% of the catalysts selected by crossing or mutation. That could be disadvantageous; however, if such a catalyst component could be useful for the optimal catalyst at a later stage of iteration.

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The present invention prevents the elimination of desirable catalyst components too early in the selection process, which results in the production of improved catalysts.

Accordingly, withdraw of the rejection is respectfully requested.

In view of the arguments presented herein, withdrawal of the rejections, favorable consideration, and early issuance of the Notice of Allowance is respectfully requested.

Respectfully submitted,

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Date: **August 12, 2005**



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CERTIFICATE OF MAILING AND AUTHORIZATION TO CHARGE

I hereby certify that the foregoing AMENDMENT D AND REQUEST FOR A TELEPHONE INTERVIEW for U.S. Application No. 09/909,038 filed July 19, 2001, was deposited in first class U.S. mail, with sufficient postage, addressed to: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on **August 12, 2005**.

The Commissioner is hereby authorized to charge any additional fees, which may be required at any time during the prosecution of this application without specific authorization, or credit any overpayment, to Deposit Account No. 16-0877.

  
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Evelyn A. DeFillio